

Federal Aid in Sport Fish Restoration
F13AF00410
F-57-R-32
Annual Performance Report

2014-15

Connecticut Inland Fisheries

Walleye Management



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State of Connecticut
Department of Energy and Environmental Protection
Bureau of Natural Resources
Inland Fisheries Division



Grant Title: Inland Fisheries Research and Management
Study 2: Warmwater Fisheries Program
Project: Warmwater Management
Job 6: Walleye Management

Period Covered: April 1, 2014 to March 31, 2015

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Date Submitted: 2015

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Cover photo: Renee Casaubon shows off a 19" Walleye caught from her dock at Candlewood Lake, but not without her friend Sarah Kennedy getting the last laugh.

Summary

Walleye fingerlings were stocked into 12 Connecticut lakes in 2014. A spring 2014 population estimate of Walleye was carried out at Batterson Park Pond and Mashapaug Lake. Results of the population estimate at Batterson Park Pond indicated that approximately 166 legal size walleye were present for Opening Day of fishing. Too few walleye were sampled at Mashapaug Lake for a population estimate to be calculated. Open water angler surveys were conducted at Gardner Lake, Batterson Park Pond and Mashapaug Lake. An estimated 267 Walleye were caught among the three lakes, of which only 16 were harvested. Nine trophy fish awards were awarded statewide for Walleye in 2014.

Background

The Walleye is one of the most popular gamefish in North America (Scott and Crossman 1973, Eddy and Underhill 1974). They grow to large size, can be caught throughout the year using a variety of techniques, and provide excellent table fare. Walleye are also efficient predators that can utilize overabundant forage fish populations. Overall, Walleye management is an important tool that adds to the diversity and quality of Connecticut's inland fishing opportunities.

Walleye populations in Connecticut Walleye Management Lakes (WMLs)(Figure 1) are completely supported by annual fall fingerling stockings. No successful Walleye reproduction has been observed to date in any of the WMLs. Statewide Walleye regulations in Connecticut are an 18-inch minimum size limit and a 2-fish possession limit (one site, Lake Pocotopaug, has a 20-inch minimum length limit).

The Connecticut Department of Energy and Environmental Protection Inland Fisheries Division (IFD) continually explores new options to increase the effectiveness and efficiency of the Walleye Management Program. One priority is the assessment of angler harvest rates to ensure that current regulations are adequate to sustain quality Walleye fishing.

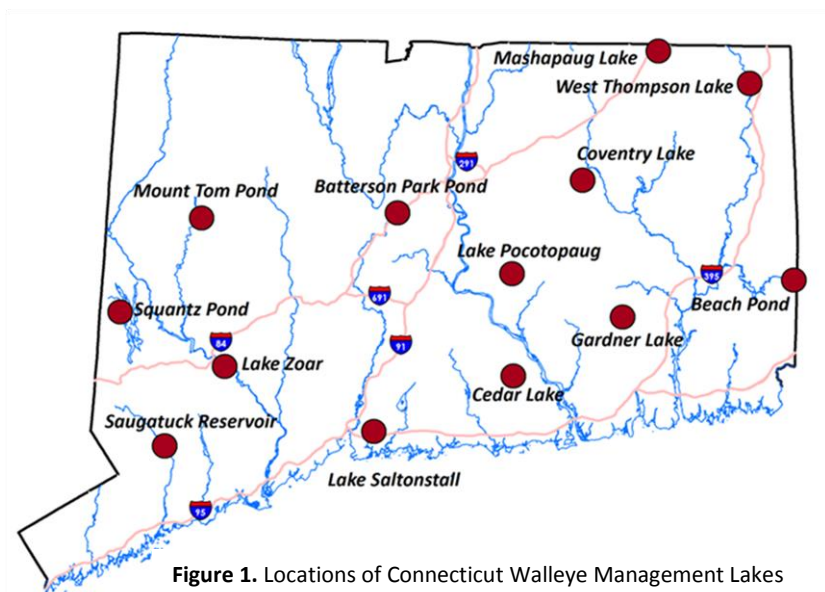


Photo of a typical 5-inch fingerling Walleye stocked during the fall into Connecticut lakes.

The purpose of Job 6 is to evaluate and optimize Walleye fisheries statewide. This report summarizes work conducted during 2014-15.

Approach

Walleye fisheries are maintained by stocking four- to six-inch fingerlings during late October-early November. Fingerlings are purchased with Federal Sport Fish Restoration funds from a commercial supplier in Minnesota. Some water companies and one municipality purchase Walleye from the same vendor and fish are concurrently shipped for stocking into their own waters. Walleye relative abundance (catch per hour or CPH) is assessed by boat electrofishing during early-mid April. Walleye population sizes are estimated on selected lakes using trap nets and electrofishing (March-early April) with a Schnabel mark-recapture design (Everhart et al.



1975). Stratified random roving angler surveys (Malvestuto et al. 1978, for detailed methods see Lake and Large River Angler Survey report: Study 2, Job 2) are conducted as resources permit to estimate angler effort, catch and harvest for Walleye, as well as angler opinions of current management.

Key Findings

Stocking

Nine public WMLs, two water supply reservoirs, and one semi-private lake were stocked with Walleye fingerlings in the fall of 2014. Stocking rates at the public lakes ranged from 9 to 15 fingerlings per acre (Table 1). Stocking rates at the other lakes ranged from six to eight per acre. Stocked fingerlings averaged 5.1 inches in length. One public WML (Coventry Lake) was not stocked in 2013 and 2014 to assess whether reduced stocking rates might enhance Walleye growth rates in that lake (see Leonard et al. 2007 for more detail).

Table 1. Numbers, stocking densities (no. per acre), and average total length (inches) of Walleye fingerlings stocked statewide by IFD and others in 2014.

Lake	Acres	Number	No./ acre	Length (in.)
Gardner	529	5,250	9.9	4.7
Squantz	270	4,065	15.1	5.6
Batterson	140	2,100	15.0	5.0
Beach	372	3,460	9.3	5.3
Mashapaug	287	2,900	10.1	4.7
Zoar	909	9,425	10.4	5.2
Cedar	69	860	12.5	5.2
Mt Tom	56	840	15.0	5.2
W. Thompson	239	3,600	15.1	5.2
Sub Total		32,500		
<u>Water companies and municipalities</u>				
Saltonstall	422	3,245	7.8	4.6
Saugatuck	827	7,000	8.3	5.1
Pocotopaug	511	3,000	5.9	4.8
Sub Total		13,245		
Total stocked		45,745		5.1

Population Estimate

The 2014 Walleye population size in Batterson Park Pond was estimated using eight days of trap netting (4/2-4/9) and three nights of electrofishing (4/3, 4/10 and 4/21). Estimated population size was 355 Walleye ≥ 10 inches (95% confidence interval or "CI"=308-409) (Appendix 1). This estimate was less than half of the 2009 estimate of 874 (95% CI=510-1,647). However there was an increase of legal size (≥ 18 -inch) Walleye from 36 fish (95% CI=23-68) in 2009 to 166 fish (95% CI=137-202) in 2014. A population estimate was also attempted at Mashapaug Lake in 2014 over a nine-day period (4/9-4/17) and three nights of electrofishing (4/10, 4/14 and 4/21). A total of 24 Walleye (10 at ≥ 18 inches) were sampled during trap netting (n=14) and night electrofishing (n=10). Only two Walleye were recaptured while trap netting and none were recaptured during night electrofishing, therefore no population estimate was obtained.

Walleye Relative Abundance

Electrofishing was conducted at five WMLs during April 2014 to assess Walleye relative abundance. Electrofishing catch per hour (CPH) of ≥ 18 inch Walleye was 1.8 at Gardner Lake

(4/24), 159.3 at Squantz Pond (4/17), 79.8 at Saugatuck Reservoir (4/14), 28.4 at Batterson Park Pond (4/10 & 4/21) and 4.3 at Mashapaug Lake (4/10) (Appendix 2).

Angler Surveys

Angler surveys were conducted at Gardner Lake, Batterson Park Pond and Mashapaug Lake in 2014 during the open water (Opening Day, 4/20-10/31/2014) season. Estimated directed effort for Walleye during the open water season was 344 angler-hrs (AH) at Gardner Lake (1.8% of total angler effort), 704 AH at Batterson Park Pond (7.0% of total effort) and 626 AH at Mashapaug Lake (4.7% of total effort). Ice fishing effort during the previous winter (2013-14) was much higher than that of the 2014 open water season at both Gardner and Mashapaug Lakes (Gardner 1,256 AH, 46% of total effort directed toward Walleye; Mashapaug 941 AH, 38% of total effort; see Leonard et al. 2014 for details). Note that ice fishing is not allowed at Batterson Park Pond. Angler catch and harvest of Walleye during the open water season was 51 (95% CI 171%) and zero at Gardner Lake; 199 (86% CI) and 10 (158% CI) at Batterson Park Pond; and 17 (151% CI) and 6 (313% CI) at Mashapaug Lake (Table 4). (see Lake and Large River Angler Survey report: Study 2, Job 2 for details on other species caught).

Table 4. Catch, harvest (95% CI) and directed effort on Walleye during the open water fishing season at Gardner Lake, Batterson Park Pond and Mashapaug Lake in 2014.

Lakes	Estimated Walleye catch	95% CI	Estimated Walleye harvest	95% CI	Directed effort (AH)	Percent of total effort	Directed catch rate (Walleye)
Gardner	51	171%	0	na	344	1.8%	0.11
Batterson	199	86%	10	158%	704	7.0%	0.23
Mashapaug	16	151%	6	313%	626	4.7%	0.03

Directed angler catch rates for Walleye during the open water season of 2014 were 0.11 at Gardner Lake, 0.23 at Batterson Park Pond and 0.03 at Mashapaug Lake. The angler exploitation rate (percentage of fish harvested of those in the lake) was 6% at Batterson Park Pond (angler harvest of 10 legal Walleye divided by a population estimate of 166 legal Walleye). Most anglers were in favor of Walleye stockings at all three lakes surveyed (Gardner Lake 67% in favor, Batterson Park Pond 66%, and Mashapaug Lake 76%, Table 5). Few anglers (2 to 4%) were opposed to Walleye introduction among the three lakes surveyed.

Table 5. Angler attitudes toward stocking Walleye into Gardner Lake, Batterson Park Pond and Mashapaug Lake during the open water fishing season 2014.

	Gardner	Batterson	Mashapaug
Highly In favor	24%	28%	34%
In favor	43%	38%	42%
No Opinion	29%	32%	20%
Opposed	2%	1%	3%
Highly Opposed	2%	1%	1%
Anglers Queried	378	223	343

Trophy Fish Awards

Nine Walleye trophy fish awards were given to anglers in 2014: three from Lake Saltonstall, three from Beach Pond, and one each from Coventry Lake, Gardner Lake and Lake Pocotopaug. To qualify for a trophy fish award, a Walleye must be larger than 23 inches for released fish and at least five pounds for kept fish. Since 1997, there have been 132 trophy fish awards given statewide for



Marc Fontaine with a trophy Walleye from Beach Pond (32", 13 lbs 8 oz). DEEP IFD file photo.

Walleye. The lakes that have produced the most trophy Walleye awards are Lake Saltonstall (43), Squantz Pond (25) and Gardner Lake (21); however, every WML stocked before 2010 has produced at least one trophy Walleye.

Discussion

Available evidence suggests that Walleye abundance at Gardner Lake and more recently Mashapaug Lake are in decline. Correspondingly, angler catch and catch rates of Walleye also declined over the same period. Investigations into possible causes of Walleye declines (such as increased predation on Walleye fingerlings, changes in the forage base, and changes in water

quality or temperature) are necessary to understand the changes in these Walleye fisheries. In comparison, three WMLs (Squantz Pond, Saugatuck Reservoir and Batterson Park Pond) all showed signs of increased Walleye abundance in 2014. In order to fully understand Connecticut Walleye fisheries, recent information is needed on other WMLs. For example, relative abundance sampling for Walleye at Beach Pond has not been conducted since 2010, and its only population estimate was conducted in 2007. Similarly, the last population estimate conducted at Lake Pocotopaug was in 2008.

Recommendations

- Investigate reasons for the declining Walleye abundance in some of the WMLs compared to the successes in others to further hone our management strategies.

Expenditures

Total Cost:	\$162,609????
Federal Share:	\$121,957
State Share:	\$40,652

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Acknowledgements

We thank all of the DEEP Inland Fisheries Division staff who assisted with data collection during 2013-14. We also thank all the Seasonal Research Assistants who participated in data collection: Andrew Bade, Mats Clark, Ian Croci, Megan Cruz, Jennifer Dupuis, Chris Finch, Matt Goklowski, Brooks Kolhi, Eric Lindquist, Kathleen Parillo, Alan Russo, Matt Smith, Shalyn Zappulla. We also thank the Burlington State Fish Hatchery for use of their trucks and personnel to stock Walleye. Special thanks to Pete Aarrestad and Bill Hyatt for reviewing the document and to the U.S. Fish and Wildlife Service, Federal Aid in Sport Fish Restoration for providing most of the funding. Finally, we thank Phil Goeden of Goeden Fisheries LLC and West Central Bait located in Minnesota for providing the quality Walleye fingerlings necessary to support this program.

Appendix 1. – Schnabel population estimates for different size categories of Walleye at Batterson Park Pond. Estimates in 2007 are from trap nets only, whereas estimates from 2009 and 2014 are from a combination of trap nets and electrofishing.

Lake	Year	No. of Year Classes	Size			Size			Size			Size		
			≥ 10 in.	95% CI	#/ac	≥ 15 in.	95% CI	#/ac	≥ 18 in.	95% CI	#/ac	≥ 20 in.	95% CI	#/ac
Batterson (140 acres)	2007	6	500	317-841	3.6	128	59-349	0.9	44	17-177	0.3	31	11-157	0.2
	2009	8	874	510-1647	6.2	300	118-1200	2.1	36	23-68	0.3	24	15-43	0.2
	2014	13	355	308-409	2.5	283	244-327	2.0	166	137-202	1.2	75	50-108	0.5

Appendix 2. – Relative abundance (electrofishing catch per hour) for all sizes, quality size (≥ 15 inches), legal size (≥ 18 inches) and large size (≥ 20 inches) Walleye from lakes sampled during April 1995-2014. Initial year stocked with Walleye fingerlings in parentheses.

	Gardner (1993)				Squantz (1993)				Saugatuck (1998)				Batterson (2001)				Mashapaug (2001)			
Year	All	≥ 15	≥ 18	≥ 20	All	≥ 15	≥ 18	≥ 20	All	≥ 15	≥ 18	≥ 20	All	≥ 15	≥ 18	≥ 20	All	≥ 15	≥ 18	≥ 20
1995	35.0	0.0	0.0	0.0	12.4	0.9	0.0	0.0												
1996	45.8	27.7	1.6	0.0	18.3	15.1	4.2	0.3												
1997	NS				106.7	87.1	44.3	12.9												
1998	NS				111.8	94.7	60.1	22.0												
1999	110.0	95.6	18.2	2.2	90.0	85.3	60.8	20.3												
2000	70.9	66.9	10.8	1.9	78.8	74.3	63.4	29.7												
2001	57.0	38.8	13.7	1.0	NS															
2002	56.4	39.1	15.5	2.3	NS															
2003	50.8	32.8	7.0	0.0	83.1	82.1	58.4	37.6	80.8	76.8	36.9	8.0								
2004	47.9	37.4	7.8	0.9	106.1	104.3	87.8	49.4	53.3	53.3	37.0	10.8	8.8	0.0	0.0	0.0	7.0	5.0	2.0	0.0
2005	57.5	45.8	20.5	5.9	167.3	152.4	130.5	79.7	NS				20.5	2.9	1.0	0.0	10.5	4.8	3.8	1.9
2006	51.4	47.2	14.2	4.2	87.6	84.7	74.3	46.7	73.5	71.5	45.7	30.8	75.6	3.0	2.0	1.0	18.0	14.0	3.0	1.0
2007	NS				NS				NS				NS				NS			
2008	123.9	116.7	36.1	8.4	62.1	58.6	46.9	30.5	NS				30.2	2.3	2.3	2.3	NS			
2009	19.2	19.2	3.6	1.2	NS				75.5	75.5	42.6	25.6	54.6	11.9	1.2	1.2	0.0	0.0	0.0	0.0
2010	42.6	17.0	6.4	0.0	123.4	99.4	90.3	59.4	NS				40.4	29.7	8.3	2.4	NS			
2011	17.3	12.4	4.9	3.7	111.3	102.4	87.9	57.9	26.5	24.5	24.5	23.4	32.5	15.5	7.2	3.6	NS			
2012	33.3	28.6	17.9	6.0	77.6	48.7	27.7	17.4	30.9	30.9	20.2	13.1	46.6	40.7	17.9	8.4	NS			
2013 ^a	10.1	8.4	2.9	1.1	NS				NS				86.1	76.5	34.7	13.2	NS			
2014 ^a	8.0	7.5	1.8	0.0	174.7	173.5	159.3	86.8	103.3	101.3	79.8	55.2	73.1	63.3	28.4	6.4	7.7	6.0	4.3	3.4

NS = Not sampled in that year

^a Entire lake sampled at Gardner Lake, not standard sites.